IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application. No.: 10/049,834 Confirmation No. 2328

Applicants : Wolfgang SCHEIBE, et al.

Filed: February 19, 2002

TC/A.U. : 3752

Examiner : Thach Bui

Docket No. : 842FR/50684

Customer No. : 23911

Title: : INJECTION VALVE FOR A COMBUSTION ENGINE

Attention: Office of Petitions

Mail Stop Petition

Commissioner for Patents

P.O. Box 1450

Alexandria VA 22313-1450

FAX (571) 273-8300

PETITION UNDER 37 C.F.R. § 1.181(a)

Sir:

Applicants respectfully petition the Office to withdraw the holding of abandonment in the above-referenced patent application.

In the above-referenced patent application, the Office issued an Office Action on February 5, 2004. In response to the Office Action, Applicants timely filed a Reply with a one-month Extension of Time on June 2, 2004. A copy of the receipt postcard with the date stamp of the Patent Office on the postcard indicating that the Office received the Reply on June 2, 2004, is enclosed. A billing entry in Applicants' matter file (copy also enclosed) states that on August 11, 2004, Applicants' attorney received a telephone call from the Examiner regarding whether Applicants had filed a response to the Office Action of February 5, 2004. The entry states that Applicants' attorney telephoned the Examiner to advise that a response was filed on June 2, 2004. This billing entry then indicates that Applicants' attorney received a telephone call from the

Examiner advising that the response was timely filed but that the Examiner had mistakenly sent a Notice of Abandonment. Applicants then received the Notice of Abandonment that was mailed by the Office on August 12, 2004. In response, Applicants filed a Request to Withdraw the Notice of Abandonment on August 19, 2004. A copy of the date-stamped receipt postcard for filing of the Request to Withdraw the Notice of Abandonment is also enclosed.

It appears that whereas Applicants timely filed a response to the Office Action of February 5, 2004, in the Reply that was filed, Applicants' representative transposed two numbers of the Application's Serial No. Applicants filed the Reply by listing Application Serial No. 10/049,843 on the Reply instead of Application Serial No. 10/049,834. However, Applicants respectfully note that even though two numbers of the Application Serial No. were transposed, Applicants correctly identified the patent application by other correct identifying information including: the Applicants' names, the Filing Date, the Art Unit, the Examiner's name, the Attorney Docket No., the Title of the application, and the Confirmation No. associated with the patent application.

Therefore, Applicants respectfully submit that they timely replied to the Office Action of February 5, 2004, and identified in the Reply the patent application to which the Reply was associated with sufficient identifying data that should have allowed the Reply to be properly matched with the patent application, or at least, should have caused a further inquiry to Applicants to properly identify the relevant patent application for Applicants' filed Reply. In fact, the billing entry discussed above in Applicants' matter file indicates that the Examiner did ultimately correctly determine that Applicants timely responded to the Office Action of February 5, 2004.

Further, Applicants also respectfully note that M.P.E.P. ¶ 502 states that "[a] minor error in the identification of the application can be corrected by the Office provided the correct identification can be quickly discovered. Examples of minor errors are transposed numbers, typographical errors, and listing the

parent application number. The failure to give any application number is not a minor error." This same M.P.E.P. paragraph further states that it would be of great assistance to the Office if all incoming papers pertaining to a filed application carried the following items: Art Unit Number, Filing Date, name of the Examiner, Title of the Invention, and Confirmation No. Applicants respectfully submit that all of this identifying information regarding the patent application was correctly provided on the Reply and should have allowed the Office to correctly match the paper with the matter file. Applicants respectfully submit that even if the Reply was mis-filed in the wrong application based on Applicants' transposed numbers, that the Examiner in the mis-filed application should have identified that the paper was mis-filed in that application with a further inquiry to Applicants regarding this unrelated Reply. M.P.E.P. ¶ 502 further states that any correspondence not containing the proper identification will be returned to the sender by OIPE. Applicants respectfully submit that Applicants' matter file does not contain any record of the Reply being returned to Applicants as a result of any misidentifying information. In fact, Applicants respectfully submit that based on the billing record entry in Applicants' matter file, the Examiner indicated that the paper had been brought to his attention.

Applicants respectfully submit that even though some period of time has transpired since the Applicants' filing of the Reply and Request for Withdrawal of the Notice of Abandonment, Applicants have subsequently inquired as to the status of the patent application. Applicants' representative filed Status Requests in the Patent Office on February 18, 2005, and October 21, 2005. Unfortunately, again, the Application Serial No. on these papers was transposed in these Status Requests. Copies of the date-stamped receipt postcards for the Status Requests are also enclosed.

Applicants respectfully note that the attorney that was prosecuting this patent application for Applicants left the firm and this matter was re-assigned to the below listed attorney. Upon assuming the responsibility for this application

and performing an on-line status check in the Patent Office's PAIR system, Applicants' new representative discovered the prosecution history discussed above. Applicants' new representative then timely prepared and filed this Petition. Applicants also respectfully note that the Examiner has also left the Patent Office.

Applicants respectfully request that in view of the above history, that the Notice of Abandonment in the above-referenced patent application be withdrawn. Applicants respectfully submit that they timely filed a Reply in response to the Office Action of February 5, 2004, and identified the associated patent application for that Reply with sufficient identifying information such that the Reply could be associated with the patent application. Applicants also respectfully submit that they had received an assurance from the Examiner that the Reply had been brought to his attention. Applicants' representative then further pursued withdrawal of the Notice of Abandonment by filing the Request for Withdrawal of the Notice of Abandonment. Applicants' representative continued to file Status Requests on the application, to which no response was received from the Office.

Therefore, in view of all of the above circumstances, Applicants respectfully submit that they timely filed a Reply to the Office Action of February 5, 2004, and conscientiously pursued determining the status of the application after filing of the Reply. Applicants respectfully request that the Notice of Abandonment be withdrawn from the above-referenced patent application. Applicants respectfully note that whereas a Petition under 37 C.F.R. § 1.181(a) may be dismissed as untimely if not received within two months of the mailing date of the action or notice from which relief is requested, Applicants respectfully request the Office's consideration of Applicants' Petition in view of the above circumstances.

If the Office determines not to grant Applicants' Petition under 37 C.F.R. § 1.181(a), Applicants also respectfully petition the Office to revive the application

under 37 C.F.R. § 1.137(b). Applicants have also enclosed a Petition under 37 C.F.R. § 1.137(b) for the Office's consideration if the Petition under 37 C.F.R. § 1.181(a) is not granted. If a Petition under 37 C.F.R. § 1.137(b) is required, the Office is authorized to charge the petition fee under 37 C.F.R. 1.17(m) of \$1,500.00 to Deposit Account No. 05-1323 (Docket No. 010816.50684US).

The Office is invited to contact the undersigned should there be any questions regarding this Petition. The Office's consideration of this matter is greatly appreciated.

Respectfully submitted,

CROWELL & MORING LLP

Dated: May 15, 2007

Robert L. Grabarek, Jr.

Reg. No. 40,625

Tel.: (949) 263-8400 (Pacific Coast)

Attachments

Intellectual Property Group P.O. Box 14300 Washington, D.C. 20044-4300 Moring LLP

Att'y Docket: 842FR/50684

Inventor(s): Serial No.: Wolfgang SCHEIBE, et al. 10/049,843

Filing Date: February 19, 2002

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Fee Transmittal

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Check No. (a)

in the amount of \$110.00

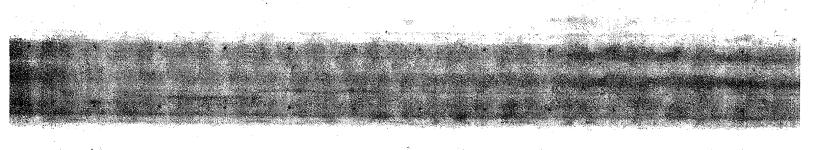
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DUE DATE: June 5, 2004

Today's Date: June 2, 2004





CROWELL & MORING LLP

VENDOR: 04815 Commissioner of Patents and Trademarks - DC 20231

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TO THE ORDER Commissioner of Patents and Trademarks

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Michelle M. Kinsella

Authorized Signature

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This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.

: 10/049,843

Confirmation No. : 2328

Applicant

: Wolfgang SCHEIBE, et al.

Filed

: February 19, 2002

TC/A.U.

: 3752

Examiner

: Thach H. BUI : 842FR/50684

Docket No. Customer No.

: 23911

Title

: INJECTION VALVE FOR A COMBUSTION ENGINE

REPLY

Mail Stop FEE AMENDMENT

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

In response to the Office action of February 5, 2004, please amend the aboveidentified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Applicant hereby requests that the period to take action in the above-captioned application be extended by one month pursuant to the provisions of 37 C.F.R. 1.136(a). A check in the amount of \$110.00 is submitted herewith in payment of the required extension fee. The Commissioner is authorized to charge any deficiency, or credit any overpayment, to Deposit Account No. 05-1323 (CAM #010816.50684US).

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace an prior versions, and listings, of claims in the application:

Listing of Claims:

- 1. (currently amended) An injection valve for an internal combustion engine comprising: a control valve, which is activated especially electromagnetically and, by means of a valve actuator, alternatively closes off or opens up an opening for the passages of a fluid, which is assigned to a sealing surface and, by these means, controls the pressure in a control pressure space, which is connected with the passage opening, the valve actuator, in addition to an actuator sealing surface, which acts together with the sealing surface of the opening for the passage of fluid, having an actuator stop surface, which is disposed at a distance from the actuator sealing surface, the valve actuator having a valve rod which, in relation to the distance between the sealing surface and the stop surface of the actuator has an extra length overlength, wherein, during the a closing movement of the valve actuator, the extra length overlength is taken up by the an elastic deformation of the valve rod.
- 2. (previously presented) The injection valve of claim 1, wherein the stop surface of the actuator is significantly larger than the sealing surface.
- 3. (previously presented) The injection valve of claim 1, wherein the valve actuator is formed with a one-part or a two-part valve rod.
- 4. (previously presented) The injection valve of claim 3, wherein the valve actuator contains a valve body, which touches the front face of the valve rod and contains the sealing surface of the actuator.
- 5. (previously presented) The injection valve of claim 4, wherein the valve body is constructed as a sphere, which interacts with the opening for the passage of fluid, forming a seal.
- 6. (previously presented) The injection valve of claim 3, wherein the sealing surface of the actuator is the front face of the valve rod formed by the valve actuator.

- 7. (previously presented) The injection valve of claim 3, wherein the valve actuator is essentially mushroom-shaped, the stem of the mushroom forming the valve rod and the stop surface of the actuator being an annular collar, concentrically surrounding the valve rod in the region of the mushroom cap.
- 8. (previously presented) The injection valve of claim 3, wherein the valve actuator is divided in a dividing joint into an actuator stop, having the stop surface of the actuator, and a valve rod, which is in operative connection with the sealing surface and the stop of the actuator.
- 9. (previously presented) The injection valve of claim 3, wherein the actuator stop is essentially mushroom-shaped, the stop surface of the actuator being an end face, contacting the valve rod in the region of the foot of the mushroom.
- 10. (previously presented) The injection valve of claim 3, wherein the valve rod is guided axially movably in at least one guide bushing.
- 11. (previously presented) The injection valve of claim 10, wherein a guide bushing is disposed at a small distance from the sealing surface of the actuator.
- 12. (previously presented) The injection valve of claim 3, wherein the length of the valve rod is a multiple of its diameter.
- 13. (previously presented) The injection valve of claim 1, wherein the sealing surface is formed in the end face of a disk-shaped insert part and adjoins the control pressure space on the side averted from the sealing surface.
- 14. (previously presented) The injection valve of claim 13, wherein the insert part is formed in two parts with a first part, which contains an opening for the passage of fluid and a discharge choke and a second part at the control pressure space side, with a borehole, which connects the control pressure space with an opening for the passage of fluid.
- 15. (previously presented) The injection valve of claim 14, wherein the second part contains an inlet choke, which is connected with the borehole.

- 16. (previously presented) The injection valve of claim 13, wherein the insert part contains an inlet choke in addition to the outlet choke.
- 17. (previously presented) The injection valve of claim 13, wherein the control pressure space is connected with an inlet choke.
- 18. (previously presented) The injection valve of claim 13, wherein the rear end of the valve needle, averted from the nozzle needle seat surface, lies in the control pressure space.
- 19. (previously presented) The injection valve of claim 18, wherein the insert part forms a stop for the valve needle.
- 20. (previously presented) The injection valve of claim 13, wherein the insert part, a centering and holding clamp and a sleeve, in which at least one valve rod and at least one guide bushing with the actuator stop surface is taken up, form a structural unit, which can be pre-adjusted by itself in relation to the protrusion of the valve rod.
- 21. (previously presented) An injection valve for an internal combustion engine comprising:

an opening having a sealing surface;

a stop displaced a distance from the opening; and

an electromagnetical control valve including:

a valve actuator having an opening position and a closing position, the valve actuator including:

an actuator sealing surface that engages the sealing surface of the opening when the valve actuator is at the closing position,

an actuator stop surface that engages the stop when the valve actuator is at the closing position, and

a valve rod disposed between the actuator sealing surface and the actuator stop surface, wherein when the valve actuator is at the closing position, the valve rod is compressed to a length that is shorter than a length of the valve rod when the valve actuator is at the opening position.

• . . . *

- 22. (previously presented) The injection valve of claim 21, wherein the stop surface of the actuator is significantly larger than the sealing surface.
- 23. (previously presented) T he injection valve of claim 21, wherein the valve actuator is formed with a one-part or a two-part valve rod.
- 24. (previously presented) The injection valve of claim 23, wherein the valve actuator contains a valve body, which is positioned at a front face of the valve rod and contains the sealing surface of the actuator.
- 25. (previously presented) T he injection valve of claim 24, wherein the valve body has the configuration of a sphere.
- 26. (previously presented) The injection valve of claim 23, wherein the sealing surface of the valve actuator is a front face of the valve rod.
- 27. (previously presented) The injection valve of claim 23, wherein the valve rod is axially movably guided in a guide bushing.
- 28. (previously presented) The injection valve of claim 27, wherein a guide bushing is disposed near the actuator sealing surface.
- 29. (previously presented) The injection valve of claim 23, wherein the length of the valve rod is a multiple of its diameter.
- 30. (previously presented) The injection valve of claim 21 further comprising a disk-shaped insert having a first end face that includes the sealing surface, and a second end face adjoining a control pressure space.

- 31. (previously presented) The injection valve of claim 30, wherein the insert has a first part, which includes the opening and a discharge choke, and a second part, which includes a borehole that connects the control pressure space with the opening.
- 32. (previously presented) The injection valve of claim 31, wherein the second part of the insert includes an inlet choke, which is connected with the borehole.
- 33. (previously presented) The injection valve of claim 30, wherein the insert includes an inlet choke.
- 34. (previously presented) The injection valve of claim 30, wherein the control pressure space is connected to the inlet choke.
- 35. (previously presented) The injection valve of claim 30 comprising a valve needle having an end disposed in the control pressure space.
- 36. (previously presented) The injection valve of claim 35, wherein the insert part forms a stop for the valve needle.
- 37. (previously presented) The injection valve of claim 30 further comprising a centering and holding clamp and a sleeve, wherein the insert part, the centering and holding clamp and the sleeve, in which the valve rod and the guide bushing that includes the actuator stop surface are placed, form a structural unit, which can be pre-adjusted in relation to the valve rod.

REMARKS/ARGUMENT

Description of amendments

Claims 1-37 are now pending and under examination. Applicant has amended claim 1 to replace the term "overlength" with a more descriptive term "extra length" and to provided antecedent basis for "the closing movement" and "the elastic deformation of the valve rod." No new matter has been added.

Interview summary

Applicant's attorney/counsel greatly appreciates the courtesy extended by Examiner Bui during the course of an interview conducted on May 12, 2004.

In the interview, Applicant's counsel described the structure and operation of the claimed invention. Applicant's counsel argued that the cited art does not disclose (1) a sealing surface, (2) an actuator stop surface, which is disposed at a distance from the actuator sealing surface, (3) a valve rod which, in relation to the distance between the sealing surface and the stop surface of the actuator has an overlength, wherein, during the closing movement, the overlength is taken up by the elastic deformation of the valve rod. Examiner asked that Applicant recites these arguments in this response.

Allowed and allowable claims

Applicant appreciates that the Examiner has indicated claims 16, 20, 33, and 37 would be allowable if they are rewritten to include all of the limitations of the base claim and any intervening claims.

Objection to the specification

The Examiner stated that the specification does not contain an abstract. Applicant respectfully disagrees because an abstract is provided in the international phase of the present application.

Rejection under 35 U.S.C. §112, second paragraph

Claims 1-20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended the claims to overcome the rejection (see the amendments to claim 1).

Rejection under 35 U.S.C. §102

Claims 1-15, 17-19, 21-32, and 34-36 were rejected under 35 U.S.C. §102(b) as being anticipated by Baumgartner (U.S. Patent 6,161,813). For the following reasons, Applicant respectfully requests reconsideration and withdrawal of the rejection.

In prior art injection valves, as discussed in the interview and set forth in the background section of the present application, a valve actuator is used to open or close a valve opening to control the injection of fuel into the combustion chambers of the engine. To close the valve opening, a surface of the valve actuator contacts a sealing surface to seal the valve opening. In addition, the sealing surface functions as a stopping surface to stop the movement of the valve actuator towards the valve opening.

As discussed in the background section of the present application, a problem with this conventional arrangement is that the sealing surface and the stopping surface put contradictory demands on the size of the valve actuator's surface. The stopping surface demands a large actuator surface to reduce the impact when the stopping surface of the valve actuator collides with the sealing surface to stop the movement of the valve actuator. On the other hand, the sealing surface requires a small actuator surface to provide better sealing.

As discussed in the interview, the claimed invention solves the problem by providing the injection valve with two separate surfaces: an actuator stop surface (12a) and a sealing surface (13, 17). When the valve is closed, the movement of the valve actuator (12) is stopped by the actuator stop surface (12a). The valve actuator (12) itself does not close the

opening (14a); instead it pushes a valve rod (16) against the sealing surface (13, 17) so that a surface of the valve rod (16) closes the opening (14a).

This new arrangement requires that, when the valve opening (14a) is closed, the valve actuator (12) contacts the stop surface (12a) and the valve rod (16) contacts the sealing surface (13, 17). In order to ensure that when the valve actuator (12) is stopped by the actuator stop surface (12a), the valve rod (16) contacts the sealing surface (13, 17) to close the opening (14a), the valve rod (16) has a free length that is longer than the distance between the actuator stop surface (12a) and the sealing surface (13, 17). When the valve rod (16) is pushed by the valve actuator (12) against the sealing surface (13, 17) to close the opening (14a), the valve rod (16) is compressed so that its compressed length is equal to the distance between the actuator stop surface (12a) and the sealing surface (13, 17); as a result, it is ensured that, when the valve opening (14a) is closed, the valve actuator (12) contacts the stop surface (12a) and the valve rod (16) contacts the sealing surface (13, 17).

These features are not disclosed by Baumgartner. In fact, Baumgartner is exactly the same as prior art. For example, in Baumgartner, the contact between the valve seat (24) and the valve member (25) is used both to stop the movement of the valve member (25) and to seal the valve opening. Further, Baumgartner does not disclose a valve rod (16) that has a free length longer than the distance between an actuator stop surface (12a) and a sealing surface (13, 17) and that, when it is pushed by the valve actuator (12) a gainst the sealing surface (13, 17) to close the opening (14a), is compressed so that its compressed length is equal to the distance between the actuator stop surface (12a) and the sealing surface (13, 17). Therefore, Baumgartner does not anticipate claims 1-15, 17-19, 21-32, and 34-36.

In light of the foregoing remarks, this application is considered to be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any

deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (CAM # 010816.50684US).

June 2, 2004

Respectfully submitted,

Song Zhu, Ph.D.

Registration No. 44,420 Donald D. Evenson

Registration No. 26,160

CROWELL & MORING LLP Intellectual Property Group P.O. Box 14300 Washington, DC 20044-4300 Telephone No.: (202) 624-2500 Facsimile No.: (202) 628-8844

DDE:SZ:tlm (010816.50684US; 321430)

CROWELL & MORING PROFORMA

BILLING ATTORNEY: 001316 CLIENT:

MATTER:

3331591

010816 010816.50684US Donald D. Evenson

L'Orange GmbH New U.S. Patent Application FEE AND DISBURSEMENTS THROUGH 08/19/04

LAST DATE BILLED 06/03/04 DATE BILLED THRU 06/02/04

BILL CYCLE: R

MATTER OPEN DATE: 01/28/2002

PROFORMA JOINT GROUP #

TOTAL FEES THIS PROFORMA

TOTAL DISBURSEMENTS THIS PROFORMA

1,116.00 343.84

UNALLOCATED CASH

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TOTAL THIS PROFORMA

1,459.84

TRUST BALANCE ON-ACCOUNT BILLS

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PROFESSIONAL SERVICES

ATTORNEY INDEX DATE NAME 3194097

05/25/04

Zhu, S.

Zhu, S.

08/11/04

DESCRIPTION OF PROFESSIONAL SERVICES Office Action; sponse Prepare and file report.

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Received telephone call from Examiner regarding whether we had filed response to Office Action of February 5, 2004; checked status of application; telephoned Examiner to advise that response was filed on June 2, 2004; received telephone call from Examiner

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status advise that I 2004; received telep. advising that response was advising that response was Examiner had mistakenly sent Non-Abandonment; report to client.

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Notice of Abandoned 4.60 \$1,116.00

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Crowell & Moring LLP

Today's Date: August 19, 2004

842FR/50684 Wolfgang SCHEIBE, *et al.* 10/049,843 February 19, 2002

Atty Docket Inventor(s): Serial No.: Filing Date: The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Request to Withdraw Notice of Abandonment

Copy of Postcard date stamped on June 2, 2004 by the US PTO

Copy of June 2, 2004 fee transmittal

Copy of June 2, 2004, Reply to February 5, 2004, Office Action

DDE:SZ:tlm (010816.50684US; 333960)



DUE DATE: August 19, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.

10/049,843

Confirmation No. : 2328

Applicant

Wolfgang SCHEIBE, et al.

Filed

: February 19, 2002

TC/A.U.

3752

Examiner Docket No.

Thach H. BUI : 842FR/50684

Customer No.

23911

Title

: INJECTION VALVE FOR A COMBUSTION ENGINE

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

REQUEST TO WITHDRAW NOTICE OF ABANDONMENT

Sir:

Applicants received a Notice of Abandonment dated August 12, 2004, allegedly for failure to respond to the Office Action of February 5, 2004. However, as noted on the attached copy of the postcard date stamped by the U.S. Patent Office on June 2, 2004, Applicants did properly respond to the Office Action. Accordingly, Applicants request that the Notice of Abandonment be withdrawn.

In order to aid the Examiner, Applicants submit herewith a further copy of the Amendment and Petition for Extension of Time that were previously filed with the U.S. Patent and Trademark Office on June 2, 2004.

In view of the abandonment being the fault of the U.S. Patent and Trademark Office, Applicants respectfully request that the Notice of Abandonment be withdrawn.

Respectfully submitted,

August 19, 2004

Song Zhu, Ph.D.

Registration No. 44,420 Donald D. Evenson

Registration No. 26,160

CROWELL & MORING LLP Intellectual Property Group P.O. Box 14300 Washington, DC 20044-4300

Telephone No.: (202) 624-2500 Facsimile No.: (202) 628-8844 DDE:SZ:tlm (010816.50684US; 333954)

....' & Moring LLP

842FR/50684

Att'y Docket: Inventor(s): Wolfgang SCHEIBE, et al. 10/049,843

Serial No.:

Filing Date: February 19, 2002

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Fee Transmittal

X Reply

Check No. Q(0)

in the amount of \$110.00

SZ:tlm (010816.50684US; 321432)



DUE DATE: June 5, 2004

Today's Date: June 2, 2004



SUBTOTAL (3) (\$)

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SUBMITTED BY Complete (if applicable) Registration No. (Attorney/Agent) Name (Print/Type) 44,420 Telephone 202-624-2500 Signature June 2, 2004 Date

Other fee (specify) _

*Reduced by Basic Filing Fee Paid

WARNING: Vnfd/mation on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

SUBTOTAL (2) \$

or number previously paid, if greater; For Reissues, see above.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.

: 10/049,843

Confirmation No. : 2328

Applicant

Wolfgang SCHEIBE, et al.

Filed

: February 19, 2002

TC/A.U.

: 3752

Examiner Docket No.

: Thach H. BUI : 842FR/50684

Customer No.

: 23911

Title

: INJECTION VALVE FOR A COMBUSTION ENGINE

REPLY

Mail Stop FEE AMENDMENT

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

In response to the Office action of February 5, 2004, please amend the aboveidentified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Applicant hereby requests that the period to take action in the above-captioned application be extended by one month pursuant to the provisions of 37 C.F.R. 1.136(a). A check in the amount of \$110.00 is submitted herewith in payment of the required extension fee. The Commissioner is authorized to charge any deficiency, or credit any overpayment, to Deposit Account No. 05-1323 (CAM #010816.50684US).

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace ail prior versions, and listings, of claims in the application:

Listing of Claims:

- 1. (currently amended) An injection valve for an internal combustion engine comprising: a control valve, which is activated especially electromagnetically and, by means of a valve actuator, alternatively closes off or opens up an opening for the passages of a fluid, which is assigned to a sealing surface and, by these means, controls the pressure in a control pressure space, which is connected with the passage opening, the valve actuator, in addition to an actuator sealing surface, which acts together with the sealing surface of the opening for the passage of fluid, having an actuator stop surface, which is disposed at a distance from the actuator sealing surface, the valve actuator having a valve rod which, in relation to the distance between the sealing surface and the stop surface of the actuator has an extra length overlength, wherein, during the a closing movement of the valve actuator, the extra length overlength is taken up by the an elastic deformation of the valve rod.
- 2. (previously presented) The injection valve of claim 1, wherein the stop surface of the actuator is significantly larger than the sealing surface.
- 3. (previously presented) The injection valve of claim 1, wherein the valve actuator is formed with a one-part or a two-part valve rod.
- 4. (previously presented) The injection valve of claim 3, wherein the valve actuator contains a valve body, which touches the front face of the valve rod and contains the sealing surface of the actuator.
- 5. (previously presented) The injection valve of claim 4, wherein the valve body is constructed as a sphere, which interacts with the opening for the passage of fluid, forming a seal.
- 6. (previously presented) The injection valve of claim 3, wherein the sealing surface of the actuator is the front face of the valve rod formed by the valve actuator.

- 7. (previously presented) The injection valve of claim 3, wherein the valve actuator is essentially mushroom-shaped, the stem of the mushroom forming the valve rod and the stop surface of the actuator being an annular collar, concentrically surrounding the valve rod in the region of the mushroom cap.
- 8. (previously presented) The injection valve of claim 3, wherein the valve actuator is divided in a dividing joint into an actuator stop, having the stop surface of the actuator, and a valve rod, which is in operative connection with the sealing surface and the stop of the actuator.
- 9. (previously presented) The injection valve of claim 3, wherein the actuator stop is essentially mushroom-shaped, the stop surface of the actuator being an end face, contacting the valve rod in the region of the foot of the mushroom.
- 10. (previously presented) The injection valve of claim 3, wherein the valve rod is guided axially movably in at least one guide bushing.
- 11. (previously presented) The injection valve of claim 10, wherein a guide bushing is disposed at a small distance from the sealing surface of the actuator.
- 12. (previously presented) The injection valve of claim 3, wherein the length of the valve rod is a multiple of its diameter.
- 13. (previously presented) T he injection valve of claim 1, wherein the sealing surface is formed in the end face of a disk-shaped insert part and adjoins the control pressure space on the side averted from the sealing surface.
- 14. (previously presented) The injection valve of claim 13, wherein the insert part is formed in two parts with a first part, which contains an opening for the passage of fluid and a discharge choke and a second part at the control pressure space side, with a borehole, which connects the control pressure space with an opening for the passage of fluid.
- 15. (previously presented) The injection valve of claim 14, wherein the second part contains an inlet choke, which is connected with the borehole.

- 16. (previously presented) The injection valve of claim 13, wherein the insert part contains an inlet choke in addition to the outlet choke.
- 17. (previously presented) The injection valve of claim 13, wherein the control pressure space is connected with an inlet choke.
- 18. (previously presented) The injection valve of claim 13, wherein the rear end of the valve needle, averted from the nozzle needle seat surface, lies in the control pressure space.
- 19. (previously presented) The injection valve of claim 18, wherein the insert part forms a stop for the valve needle.
- 20. (previously presented) The injection valve of claim 13, wherein the insert part, a centering and holding clamp and a sleeve, in which at least one valve rod and at least one guide bushing with the actuator stop surface is taken up, form a structural unit, which can be pre-adjusted by itself in relation to the protrusion of the valve rod.
- 21. (previously presented) An injection valve for an internal combustion engine comprising:

an opening having a sealing surface;

a stop displaced a distance from the opening; and

an electromagnetical control valve including:

a valve actuator having an opening position and a closing position, the valve actuator including:

an actuator sealing surface that engages the sealing surface of the opening when the valve actuator is at the closing position,

an actuator stop surface that engages the stop when the valve actuator is at the closing position, and

a valve rod disposed between the actuator sealing surface and the actuator stop surface, wherein when the valve actuator is at the closing position, the valve rod is compressed to a length that is shorter than a length of the valve rod when the valve actuator is at the opening position.

- 22. (previously presented) The injection valve of claim 21, wherein the stop surface of the actuator is significantly larger than the sealing surface.
- 23. (previously presented) T he injection valve of claim 21, wherein the valve actuator is formed with a one-part or a two-part valve rod.
- 24. (previously presented) The injection valve of claim 23, wherein the valve actuator contains a valve body, which is positioned at a front face of the valve rod and contains the sealing surface of the actuator.
- 25. (previously presented) T he injection valve of claim 24, wherein the valve body has the configuration of a sphere.
- 26. (previously presented) The injection valve of claim 23, wherein the sealing surface of the valve actuator is a front face of the valve rod.
- 27. (previously presented) The injection valve of claim 23, wherein the valve rod is axially movably guided in a guide bushing.
- 28. (previously presented) The injection valve of claim 27, wherein a guide bushing is disposed near the actuator sealing surface.
- 29. (previously presented) The injection valve of claim 23, wherein the length of the valve rod is a multiple of its diameter.
- 30. (previously presented) The injection valve of claim 21 further comprising a disk-shaped insert having a first end face that includes the sealing surface, and a second end face adjoining a control pressure space.

- 31. (previously presented) The injection valve of claim 30, wherein the insert has a first part, which includes the opening and a discharge choke, and a second part, which includes a borehole that connects the control pressure space with the opening.
- 32. (previously presented) The injection valve of claim 31, wherein the second part of the insert includes an inlet choke, which is connected with the borehole.
- 33. (previously presented) The injection valve of claim 30, wherein the insert includes an inlet choke.
- 34. (previously presented) The injection valve of claim 30, wherein the control pressure space is connected to the inlet choke.
- 35. (previously presented) The injection valve of claim 30 comprising a valve needle having an end disposed in the control pressure space.
- 36. (previously presented) The injection valve of claim 35, wherein the insert part forms a stop for the valve needle.
- 37. (previously presented) The injection valve of claim 30 further comprising a centering and holding clamp and a sleeve, wherein the insert part, the centering and holding clamp and the sleeve, in which the valve rod and the guide bushing that includes the actuator stop surface are placed, form a structural unit, which can be pre-adjusted in relation to the valve rod.

REMARKS/ARGUMENT

Description of amendments

Claims 1-37 are now pending and under examination. Applicant has amended claim 1 to replace the term "overlength" with a more descriptive term "extra length" and to provided antecedent basis for "the closing movement" and "the elastic deformation of the valve rod." No new matter has been added.

Interview summary

Applicant's attorney/counsel greatly appreciates the courtesy extended by Examiner Bui during the course of an interview conducted on May 12, 2004.

In the interview, Applicant's counsel described the structure and operation of the claimed invention. Applicant's counsel argued that the cited art does not disclose (1) a sealing surface, (2) an actuator stop surface, which is disposed at a distance from the actuator sealing surface, (3) a valve rod which, in relation to the distance between the sealing surface and the stop surface of the actuator has an overlength, wherein, during the closing movement, the overlength is taken up by the elastic deformation of the valve rod. Examiner asked that Applicant recites these arguments in this response.

Allowed and allowable claims

Applicant appreciates that the Examiner has indicated claims 16, 20, 33, and 37 would be allowable if they are rewritten to include all of the limitations of the base claim and any intervening claims.

Objection to the specification

The Examiner stated that the specification does not contain an abstract. Applicant respectfully disagrees because an abstract is provided in the international phase of the present application.

Rejection under 35 U.S.C. §112, second paragraph

Claims 1-20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended the claims to overcome the rejection (see the amendments to claim 1).

Rejection under 35 U.S.C. §102

Claims 1-15, 17-19, 21-32, and 34-36 were rejected under 35 U.S.C. §102(b) as being anticipated by Baumgartner (U.S. Patent 6,161,813). For the following reasons, Applicant respectfully requests reconsideration and withdrawal of the rejection.

In prior art injection valves, as discussed in the interview and set forth in the background section of the present application, a valve actuator is used to open or close a valve opening to control the injection of fuel into the combustion chambers of the engine. To close the valve opening, a surface of the valve actuator contacts a sealing surface to seal the valve opening. In addition, the sealing surface functions as a stopping surface to stop the movement of the valve actuator towards the valve opening.

As discussed in the background section of the present application, a problem with this conventional arrangement is that the sealing surface and the stopping surface put contradictory demands on the size of the valve actuator's surface. The stopping surface demands a large actuator surface to reduce the impact when the stopping surface of the valve actuator collides with the sealing surface to stop the movement of the valve actuator. On the other hand, the sealing surface requires a small actuator surface to provide better sealing.

As discussed in the interview, the claimed invention solves the problem by providing the injection valve with two separate surfaces: an actuator stop surface (12a) and a sealing surface (13, 17). When the valve is closed, the movement of the valve actuator (12) is stopped by the actuator stop surface (12a). The valve actuator (12) itself does not close the

opening (14a); instead it pushes a valve rod (16) against the sealing surface (13, 17) so that a surface of the valve rod (16) closes the opening (14a).

· ...

This new arrangement requires that, when the valve opening (14a) is closed, the valve actuator (12) contacts the stop surface (12a) and the valve rod (16) contacts the sealing surface (13, 17). In order to ensure that when the valve actuator (12) is stopped by the actuator stop surface (12a), the valve rod (16) contacts the sealing surface (13, 17) to close the opening (14a), the valve rod (16) has a free length that is longer than the distance between the actuator stop surface (12a) and the sealing surface (13, 17). When the valve rod (16) is pushed by the valve actuator (12) against the sealing surface (13, 17) to close the opening (14a), the valve rod (16) is compressed so that its compressed length is equal to the distance between the actuator stop surface (12a) and the sealing surface (13, 17); as a result, it is ensured that, when the valve opening (14a) is closed, the valve actuator (12) contacts the stop surface (12a) and the valve rod (16) contacts the sealing surface (13, 17).

These features are not disclosed by Baumgartner. In fact, Baumgartner is exactly the same as prior art. For example, in Baumgartner, the contact between the valve seat (24) and the valve member (25) is used both to stop the movement of the valve member (25) and to seal the valve opening. Further, Baumgartner does not disclose a valve rod (16) that has a free length longer than the distance between an actuator stop surface (12a) and a sealing surface (13, 17) and that, when it is pushed by the valve actuator (12) against the sealing surface (13, 17) to close the opening (14a), is compressed so that its compressed length is equal to the distance between the actuator stop surface (12a) and the sealing surface (13, 17). Therefore, Baumgartner does not anticipate claims 1-15, 17-19, 21-32, and 34-36.

In light of the foregoing remarks, this application is considered to be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any

deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (CAM # 010816.50684US).

June 2, 2004

Respectfully submitted,

Song Zhu, Ph.D.

Registration No. 44,420 Donald D. Evenson Registration No. 26,160

CROWELL & MORING LLP Intellectual Property Group P.O. Box 14300 Washington, DC 20044-4300 Telephone No.: (202) 624-2500 Facsimile No.: (202) 628-8844 DDE:SZ:tlm (010816.50684US; 321430)

35 Crowell & Moring LLP

Today's Date: February 18, 2005

842FR/50684

Att'y Docket: First Named Inventor: Serial No.:

Wolfgang SCHEIBE 10/049,843 February 19, 2002

Filing Date:

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Status Request

DDE:SZ:tlm (010816.50684US; 361613)



DUE DATE: February 19, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.

: 10/049,843

Confirmation No. :

2328

First Named Inventor

: Wolfgang SCHEIBE

Filed

: February 19, 2002

TC/A.U.

3752

Examiner

: Thach BUI

Docket No.

: 842FR/50684

Customer No.

: 23911

Title

: INJECTION VALVE FOR A COMBUSTION ENGINE

STATUS REQUEST

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

Our records indicate that we have not received any further correspondence in reference to the above-identified application since August 19, 2004, when we filed our Request to Withdraw Notice of Abandonment. Please advise the undersigned of the status of the application.

It would be appreciated if the undersigned were telephoned in the event there are any questions related to this Request or the application in general.

Respectfully submitted,

February 18, 2005

Song Zhu, Ph.D.

Registration No. 44,420

Donald D. Evenson Registration No. 26,160

CROWELL & MORING LLP Intellectual Property Group P.O. Box 14300 Washington, DC 20044-4300 Telephone No.: (202) 624-2500 Facsimile No.: (202) 628-8844 DDE:SZ:tlm (010816.50684US; 361611)

Att'y Docket: 842FR/50884
First Named Inventor: Wolfgang SCHEIBE
Serial No.: 10/049,843
Filing Date: February 19, 2002

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Status Request (1 pg.)

DDE:SZ:smw



DUE DATE:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.

: 10/049,843

Confirmation No. :

2328

First Named Inventor Filed

: Wolfgang SCHEIBE: February 19, 2002

TC/A.U.

: 3752

Examiner

: Thach BUI

Docket No.

: 842FR/50684

Customer No.

: 23911

Title

: INJECTION VALVE FOR A COMBUSTION ENGINE

STATUS REQUEST

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

Our records indicate that we have not received any further correspondence in reference to the above-identified application since August 19, 2004, when we filed our Request to Withdraw Notice of Abandonment. Please advise the undersigned of the status of the application.

It would be appreciated if the undersigned were telephoned in the event there are any questions related to this Request or the application in general.

Respectfully submitted,

October 21, 2005

Song Zhu, Ph.D.

Registration No. 44,420

Donald D. Evenson Registration No. 26,160

CROWELL & MORING LLP Intellectual Property Group P.O. Box 14300 Washington, DC 20044-4300

Telephone No.: (202) 624-2500 Facsimile No.: (202) 628-8844

DDE:SZ:smw

PTO/SB/64 (04-07)
Approved for use through 09/30/2007. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

		EVIVAL OF AN APPLICATION FOR INTENTIONALLY UNDER 37 CFR 1			Docket Number (Optional) 842FR/50684
First name	ed inventor:	Wolfgang SCHEIBE			
Application	n No.:	10/049,834	Art Unit:	375	52
Filed: F	February 19, 200	02	Examiner:	Tha	ach Bui
Title:	NJECTION VAL	VE FOR A COMBUSTION ENGINE			
Mail Stop Commission P.O. Box Alexandria	oner for Pate	ents			
		information or assistance is needed in compormation at (571) 272-3282.	leting this for	m, p	lease contact Petitions
action by t	the United St	application became abandoned for failure to ates Patent and Trademark Office. The date or reply in the office notice or action plus an	e of abandon	men	t is the day after the expiration
	APF	PLICANT HEREBY PETITIONS FOR REVIV	'AL OF THIS	APF	PLICATION
	(1) (2) (3)	grantable petition requires the following item Petition fee; Reply and/or issue fee; Terminal disclaimer with disclaimer fee - re filed before June 8, 1995; and for all design Statement that the entire delay was uninter	quired for all applications		
<u> </u>	all entity-fee	\$ (37 CFR 1.17(m)). Applicant cl Ill entity – fee \$ <u>1,500.00</u> (37 CFR 1.1		ntity	status. See 37 CFR 1.27.
2. Reply a A	the form o			lentii	fy type of reply):
		been filed previously on <u>June 2, 2004</u> nclosed herewith.			
В	L has	fee and publication fee (if applicable) of \$ _ been paid previously on nclosed herewith.		_•	
		[Page 1 of 2]			

[Page 1 of 2]

This collection of information is required by 37 CFR 1.137(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/64 (04-07)
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Since this utility/plant application was filed of	on or after June 8, 1995, no terminal disclaimer is required.
	7 CFR 1.20(d)) of \$ for a small entity or \$ e required period of time is enclosed herewith (see
4. STATEMENT: The entire delay in filing the requifiling of a grantable petition under 37 CFR 1.137 Trademark Office may require additional information.	red reply from the due date for the required reply until the (b) was unintentional. [NOTE: The United States Patent and ation if there is a question as to whether either the ler 37 CFR 1.137(b) was unintentional (MPEP 711.03(c),
Petitioner/applicant is cautioned to avoid submitting per contribute to identity theft. Personal information such numbers (other than a check or credit card authorization the USPTO to support a petition or an application. If this USPTO, petitioners/applicants should consider redacting to the USPTO. Petitioner/applicant is advised that the r of the application (unless a non-publication request in co of a patent. Furthermore, the record from an abandon- referenced in a published application or an issued patent	WARNING: resonal information in documents filed in a patent application that may as social security numbers, bank account numbers, or credit card form PTO-2038 submitted for payment purposes) is never required by stype of personal information is included in documents submitted to the guch personal information from the documents before submitting them record of a patent application is available to the public after publication ampliance with 37 CFR 1.213(a) is made in the application) or issuance ed application may also be available to the public if the application is t (see 37 CFR 1.14). Checks and credit card authorization forms PTO- the application file and therefore are not publicly available.
Signature	
Oignature	Date
Robert L. Grabarek, Jr.	40,625
Typed or printed name	Registration Number, if applicable
D.O. Boy 14200	
P.U. BOX 14300	(202) 624-2500
P.O. Box 14300 Address	(202) 624-2500 Telephone Number
Address	Telephone Number
Address Washington, D.C. 20044-4300	Telephone Number
Address	Telephone Number
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